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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,620

01/25/2006

Kunitake Matsushita

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EXAMINER

MULLINS, BURTON S

ART UNIT

PAPER NUMBER

2834

MAIL DATE

DELIVERY MODE

04/21/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,620	Applicant(s) MATSUSHITA ET AL.	
	Examiner BURTON MULLINS	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/06, 6/07</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11 June 2007 and 17 July 2006 have been considered by the examiner.

Drawings

3. Figures 1 & 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 1 is objected to because of the following informalities: The phrase "positioned toward" is not idiomatic. This will be taken as meaning the thrust mechanism and resilient member are disposed on the lead screw side of the rotary shaft. This contrasts with the plain

portion side of the shaft the motor stator is on. Also, on line 12 delete passive voice “being”.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. (US 5,811,903) in view of Matsushita (US 7,086,303). Ueno teaches a stepping motor 1 comprising: a stator assembly 2 (Fig.1); a rotary shaft 3 including a lead screw portion 4 and a plain portion (not numbered, Fig.1) which has a rotor magnet 17 disposed concentrically thereon so as to face an inner circumference of the stator assembly (Fig.1), the rotary shaft having both ends thereof rotatably supported by respective bearings (thrust bearings) 5 & 6 (Fig.1); and a thrust mechanism (part of thrust bearing 5) disposed at one end of the rotary shaft “positioned toward the lead screw portion,” [sic] (i.e., on the side of the shaft the lead screw portion 4 is located); a recess (not numbered, Fig.1) formed at the one end of the rotary shaft 3 positioned toward the lead screw portion, and a point-contact member (not numbered, Fig.1); the one bearing 5 rotatably supporting the one end of the rotary shaft “positioned toward the lead screw portion” [sic].

Ueno does not teach that the thrust mechanism (thrust bearing) 5 is “structured such that a resilient member is provided in [the] recess”, such that point-contact member is “provided

between the resilient member and one bearing of the respective bearings...wherein thrust force is given by the resilient member to the rotary shaft in an axial direction.”

Matsushita teaches a lead screw stepper motor 41 including a lead screw shaft 30 (Fig.2) with a recess filled by a resilient member 64 comprising resin (Fig.4) such that point-contact member (ball) 66 is provided between the resilient member 64 and one bearing 45 wherein thrust force is given by the resilient member 64 to the shaft 30 in an axial direction (inherent since resilient member 64 is in cavity in shaft). The resilient member prevents problems in the pitch characteristics of the lead screw (c.2:5-9).

It would have been obvious to modify Ueno and provide a resilient member in the shaft recess per Matsushita since this would have prevented problems in the lead screw's pitch characteristics.

7. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. (US 5,811,903) in view of Yano et al. (US 6,317,287). Ueno teaches a stepping motor 1 comprising: a stator assembly 2 (Fig.1); a rotary shaft 3 including a lead screw portion 4 and a plain portion (not numbered, Fig.1) which has a rotor magnet 17 disposed concentrically thereon so as to face an inner circumference of the stator assembly (Fig.1), the rotary shaft having both ends thereof rotatably supported by respective bearings (thrust bearings) 5 & 6 (Fig.1); and a thrust mechanism (part of thrust bearing 5) disposed at one end of the rotary shaft “positioned toward the lead screw portion,” [sic]] (i.e., on the side of the shaft the lead screw portion 4 is located); a recess (not numbered, Fig.1) formed at the one end of the rotary shaft 3 positioned toward the lead screw portion, and a point-contact member (not numbered, Fig.1); the one

bearing 5 rotatably supporting the one end of the rotary shaft “positioned toward the lead screw portion” [sic].

Ueno does not teach that the thrust mechanism (thrust bearing) 5 is “structured such that a resilient member is provided in [the] recess”, such that point-contact member is “provided between the resilient member and one bearing of the respective bearings...wherein thrust force is given by the resilient member to the rotary shaft in an axial direction.”

Yano teaches a motor with a lead screw including a thrust bearing structured such that a resilient member (compression spring) 9 is provided in a recess 5c in the lead screw shaft 5 (Fig.1), such that point-contact member 10 is provided between the resilient member 9 and one bearing 12 of the respective bearings...wherein thrust force is given by the resilient member to the rotary shaft in an axial direction due to the inherent resilience of the spring 9. Yano’s spring preloads the lead screw and cancels backlash (abstract).

It would have been obvious to modify Ueno and provide a resilient member in the recess of the lead screw per Yano since the resilient member would have preloaded the lead screw and canceled backlash.

Regarding claim 2, the resilient member 9 in Yano is a coil spring, and the point-contact member in Ueno is a spherical body made of steel (Fig.1)

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2834

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BURTON MULLINS whose telephone number is (571)272-2029. The examiner can normally be reached on 9-5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571)272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BURTON MULLINS/
Primary Examiner, Art Unit 2834

bsm
15 April 2008